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WATER QUALITY MEMORANDUM
Utah Coal Regulatory Program

June 12, 2012

TO: Internal File

THRU: Steve Christensen, Permit Supervisor SC

FROM: April A. Abate, Environmental Scientist III aaa 6/18/2012

RE: 2011 Fourth Quarter Water Monitoring, Canyon Fuel Company, LLC, SUFCO Mine, C/041/0002, WQ11-04, Task ID #3974

The SUFCO Mine is an operating longwall mine. Current operations are in the Quitchupah and Muddy Tracts. Water monitoring requirements can be found in Section 7.3.1.2 of the MRP, see Tables 7-2, 7-3, 7-4, 7-5, and 7-5A. Page 7-48 contains the important statement that (non Box-Canyon, non-UPDES) "monitoring sites are sampled three times per year," meaning the second, fourth, and fourth quarters.

SUFCO has added two additional stream monitoring points to their plan: SUFCO 006A and SUFCO 006B are intended to monitor the upstream and downstream flow along the South Fork of Quitchupah Creek on a quarterly basis and every two weeks while mining is taking place within a 15-degree angle of draw of the stream channel.

Additional monitoring is taking place in the West Lease area with new monitoring locations GW-8 and GW-9 established for Lizonbee Springs, Mud Spring and Broad Hollow Spring.

1. Was data submitted for all of the MRP required sites?

Springs **YES** ☒ **NO** ☐

The MRP requires the Permittee to monitor 29 springs during the second, third, and fourth quarter as per Table 7-2. Some require full laboratory analysis according to Table 7-4, while others simply require field measurements.

All spring locations were monitored during the fourth quarter of 2011. No flow was reported from the Link Canyon portal sites, SUFCO-89, PINES 105, and 311. No flow was observed from Mud Spring but standing water collected inside the spring box was sampled for operational parameters. At M-SP01 spring, the water collection box was closed for the winter but the overflow water was sampled. The lower portion of PINES 310 was dry but

the upper was flowing at 0.40 gal/min. Flows at the Lizonbee Springs (GW-8 and GW-9) were reported between 1.47-1.53 gpm.

Streams **YES** ☒ **NO** ☐

The MRP requires the Permittee to monitor 20 streams during the second, third and fourth quarter as per Table 7-2. Perennial stream monitoring of Box Canyon is required at FP-1 and FP-2 at the beginning of the month of October each year.

No flow was reported at FP-1, FP-2, Link Canyon drainage sits 001 and 002, PINES 106, USFS 109 and USFS 110. The PINES and USFS locations are intended to measure any flow at the beginning of the perennial reach of Box Canyon.

Wells **YES** ☒ **NO** ☐

The MRP requires the Permittee to monitor water levels for 7wells. Monitoring wells US-80-2, 89-20-2W, US-81-4, US-81-3 and 01-8-1 are monitored quarterly. Monitoring wells US-80-4 and US-79-13 are monitored annually during the 3rd quarter. Groundwater monitoring at the Waste Rock site occurs three times per year.

Well US-81-3 was reported as blocked with no access. Blocked by what? All other wells were gauged according to the monitoring plan during the fourth quarter of 2011.

UPDES

The UPDES Permit/MRP require bi-weekly monitoring of 3 outfalls: UT0022918-001: *mine water discharge to Spring Canyon;* UT0022918-002: *sedimentation pond discharge to Spring Canyon; and* UT0022918-003A*: the mine water discharge to the North Fork of Quitchupah Creek.*

The Permittee submitted all required samples for the UPDES sites. Outfall 001 reported no flow this quarter. The mine water discharge outfall locations that did report data reported the following:

	SED POND Q TO E SPRING CYN Outfall: UT0022918-002	Mine Water Discharge to N.Fk. Quitchupah Outfall: UT0022918-003A
Average Flow (gpm)	58.4	2,322
Average TDS (mg/L)	874	654

All data reported were within the compliance requirements of the UPDES Permit No. UT0022918.

2. Were all required parameters reported for each site? YES ☒ NO ☐

3. Were any irregularities found in the data? YES ☒ NO ☐

The following sample locations reported results outside of at least two standard deviations:

Sample ID	Date	Parameter	Value	STD. Deviation
Stream 007	10/29/2011	DO	10.53	>2.49
M-STR4	10/29/2011	DO	10.4	>3.85
PINES 302	11/18/2011	DO	9.88	>2.57
PINES 403	11/18/2011	Cond.	882	>3.08
		D-Ca	90.6	>3.35
		D-Mg	68.3	>2.07
		SO4	190	>2.98
US-81-4	10/27/2011	Depth	1005 (ft)	>2.54
WRDS-B3	12/9/2011	D-K	6.1	>2.09
		Cl	2100	>2.11
WRDS-B6	12/9/2011	D-K	20.8	>2.28
		D-Na	668	>5.03
		Cl	2200	>2.32
WRDS-B8	12/9/2011	D-Ca	205	>3.27
		D-Mg	80.8	>3.61
		D-K	5.5	>3.29
		D-Na	212	>4.88

Notes: *results are in mg/L unless noted.

4. On what date does the MRP require a five-year re-sampling of baseline water data.

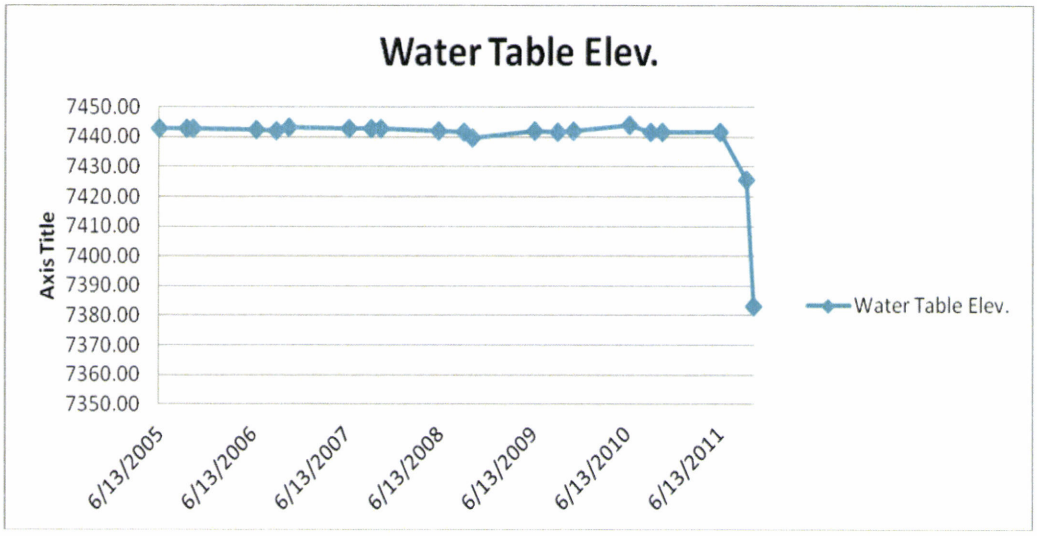
There is no commitment in the MRP to resample for baseline parameters.

5. Based on your review, what further actions, if any, do you recommend?

Dissolved oxygen rates were higher than usual in stream and surface water samples

collected this quarter. This could be attributed to the colder season (thus colder water temperatures) the readings were taken in.

Groundwater elevation in Well US-81-4 showed a significant drop of 43 from June through October of 2011. This well is located in the R2P2 Block of coal that is proposed to be mined in 2013. The drop in the water table is likely due to pumping as the panel is being slated for development.



No recommendations are warranted at this time.

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